

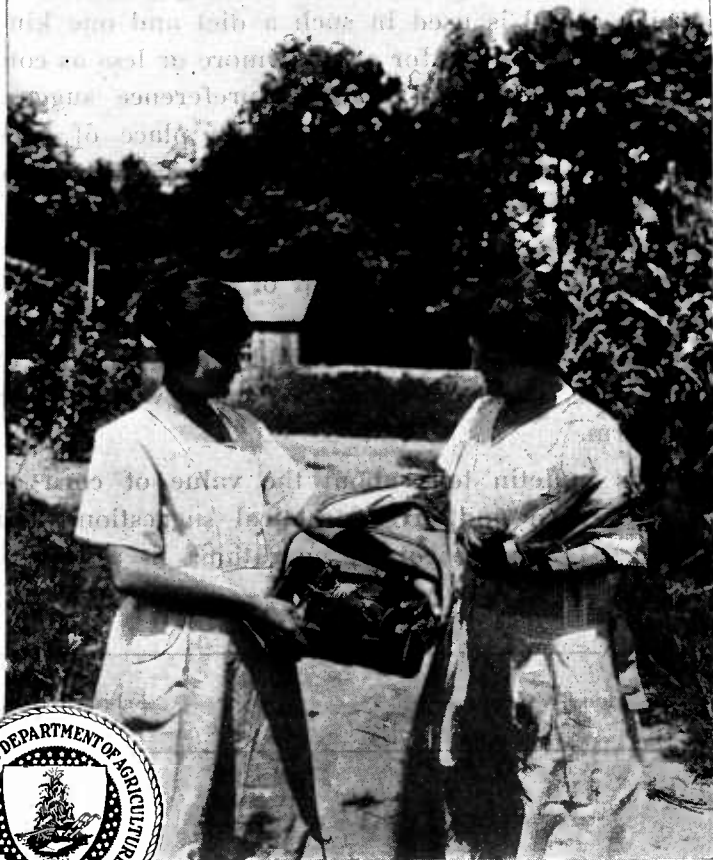
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No 1236

CORN AND ITS USES AS FOOD



THE ORDINARY DIET in this country includes some vegetables and fruits, some flesh foods, dairy products, and eggs, some fats, some sugar and other sweets, and some of the starchy cereal foods such as corn, wheat, rice, or oats. As far as food values are concerned it makes little difference which cereal is used in such a diet and one kind may be substituted for another more or less as convenience, price, and personal preference suggest. The cereals may also be used in place of such starchy vegetables as potatoes, sweet potatoes, and beans, providing other kinds of vegetables and fruits are present in reasonable amounts. Thus, when corn is abundant and cheap or when any of the other starchy foods are scarce and dear, one may increase the use of corn and decrease the use of the other cereal or starchy vegetable without fear of harm.

This bulletin tells about the value of corn as human food and gives practical suggestions and recipes for using corn preparations in a variety of ways.

CORN AND ITS USES AS FOOD.

Prepared in the Office of Home Economics, States Relations Service.

CONTENTS.

	Page.		Page.
Ways in which corn is used for human food-----	3	Corn meal—Continued.	
Food value-----	4	Puddings and cakes-----	16
Corn meal-----	7	Corn flour-----	17
Mush-----	10	Hominy-----	17
Breads-----	11	Special breakfast preparations-----	20
Puffs, griddle cakes, and waffles-----	14	Pop corn-----	20
Corn meal and meat dishes-----	15	Fresh, canned, and dried green corn-----	22
		Summary-----	25



CORN is the cereal most closely associated with America and is native to this hemisphere. It is now commonly cultivated for human food in other parts of the world where there is warmth and sunshine enough for it to reach best development, but it was first used in America. The carvings left on the buildings of the little-known Maya race in Central America show that it was used as a religious symbol of prosperity long before the time of Columbus. The first white settlers quickly learned from their Indian neighbors to grow and prepare it, and it still maintains a prominent place among our cereal foods.

Its importance here is shown by the fact that with us the word "corn" has come to refer almost entirely to this one cereal, *Zea mays*, whereas in other English-speaking regions it still refers to cereals in general and the word "maize" is used for what we commonly call corn. Wheat is now more generally used for bread making, but corn forms a basis of many popular breads and cakes. At ordinary prices corn preparations are among the more economical of our common foods, and, as many palatable and wholesome dishes can be made from them, their use may well be increased.

WAYS IN WHICH CORN IS USED FOR HUMAN FOOD.

There are various ways in which corn is prepared for use as human food. The grain is parched and eaten whole; it is ground to varying degrees of fineness to make hominy, corn meal, and corn flour; it is treated with alkali to remove the skin and germ to make lye hominy or hulled corn; or it is prepared by special processes to make a variety of breakfast foods.

The starch is sometimes separated out and sold as cornstarch; it is also made into glucose, much used by confectioners and in table sirups, and into such sugars as corn sugar (also called cerelese or bread sugar), and anhydrous glucose, a product sometimes employed in invalid dietetics.

The fat in the germ is separated out and prepared for use as table oil and in cooking.

Recently phytin, a phosphorus compound, has also been separated from the corn on a commercial scale and is attracting attention as a possible means of introducing organic phosphorus into diets that are poor in that important element.

The half-ripe corn, especially of certain sweet varieties, is eaten as a vegetable, either fresh or canned, while the ripe kernels of other varieties are used for pop corn.

FOOD VALUE.

Corn and the other cereals, such as wheat, rice, and oats, form a group of foods that contain a large amount of starch and an amount of protein that is at least above the average for food materials in common use. Studies of actual dietaries show that the amount of cereal food consumed in the form of breakfast foods, bread, cake, or otherwise, averages at least about 10 ounces a man a day. This is the equivalent of two generous servings of cooked cereal, 8 ounces of bread, and $1\frac{1}{2}$ ounces of flour or meal used in general cooking. Equivalent figures for the average weekly consumption of cereals by the type family of two adults and three children are 10 pounds of bread and $7\frac{1}{2}$ pounds of flour, meal, breakfast foods, and other dry cereal preparations. These amounts yield about 30 per cent of the total energy of the average diet and about 35 per cent of the total protein. These amounts may be increased to 12 to 14 ounces a man a day, or to the equivalent of 12 pounds of bread and 9 pounds of dry cereal a family a week if care is taken in the preparation of the cereal foods and also in the selection of other foods to go with them. In general, the most economical and at the same time adequate diets are those in which generous amounts of cereal foods are combined with reasonable amounts of other kinds of food. Such questions are discussed more fully in other publications of this series.¹

To make a diet which meets all the nutritive needs of the body, any of the cereals must be supplemented by meat or other flesh foods, milk and its products, eggs, vegetables, and fruits. Some of these foods supplement the proteins of the cereals which are not of a kind to meet all the needs of the body for protein, and some supply mineral matter and vitamins in which the cereals are lacking. Scrapple, an old fashioned Pennsylvania-German dish now produced commercially as well as at home, is made by cooking corn meal with pork trimmings, and is a good example of a combination in which the incomplete protein of the cereal is supplemented by a little of the more nearly complete protein of the meat.

The cereals contain, roughly stated, from 7 to 16 per cent protein, from 70 to 80 per cent carbohydrates (principally starch but includ-

¹ U. S. Dept. Agr., Farmers' Buls. No. 808, How to Select Foods. I. What the Body Needs; No. 817, How to Select Foods. II. Cereal Foods; No. 1313, Good Proportions in the Diet.

ing also small amounts of cellulose), and from 1 to 7 per cent fat, while a pound furnishes from 1,600 to 1,800 calories of energy. Corn contains about as much starch as the average for the cereals, slightly less protein, and more fat, and its energy value is slightly greater.

Since in determining the general food values in the ordinary mixed diet the food values of the cereals may be considered interchangeable, a person can tell fairly well which is the more economical simply by comparing prices per pound. For example, if hominy and rice cost the same, it is largely a matter of personal preference and convenience which shall be chosen, but if either is cheaper or more abundant, it may quite safely be substituted for the other.

The various cereals differ considerably in bread-making qualities. Corn is used for a variety of quick breads very popular in many parts of the United States, but it can not be used like wheat flour in making yeast-raised bread, because it does not contain the necessary gluten. During the war, when it was considered a patriotic duty to save wheat, it was found that corn meal or corn flour could be easily substituted for more or less of the wheat flour in many recipes for quick breads, and similar substitutions should be remembered when corn is especially cheap or abundant (pp. 11-15). Many of the corn breads are prepared with milk and eggs, which render them more nearly complete foods than breads made principally of flour or meal.

The way in which corn or any other cereal is prepared may change the food value more or less. Cornstarch and corn oil, each of which represents only one of the nutrients found in the whole grain, of course differ from the whole grain in food value as well as in appearance and use. The amount of the skin and germ (fig. 1) that is removed when the grain is ground into hominy, meal, or flour also makes the products differ in their value to the body.

When the skin or bran is left in, the product contains more of the mineral substances needed by the body, a trifle more protein, and more of vitamin B. It also contains much more cellulose. This may be helpful in counteracting constipation, but it may lessen the amount of nutrients which the body digests and utilizes. The rough particles of the cellulose may injure the delicate lining of the digestive tract of babies and persons suffering from certain disorders, though they are not harmful to normal persons.

The germ contains most of the fat of the grain, and in or around it is found the vitamin A. Removing it therefore decreases the food value of the product. Unfortunately the germ is the part of the grain that spoils first, so that retaining the germ lessens the keeping quality of the product.

Removing the skin and the germ thus has both advantages and disadvantages. If the product can be used soon after grinding or if

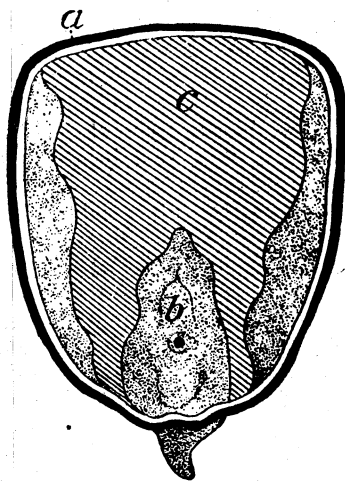


FIG. 1.—Diagrammatic section of a grain of corn: a, Skin; b, germ; c, endosperm.

the diet is poor in animal foods, fruits, and vegetables, it may be wise to choose the preparations that contain all parts of the grain. If the product must be kept for a long time and if the diet is fairly varied, the decorticated, degermed products may be preferred.

The varieties of corn commonly used for making hominy, meals, and breakfast cereals are similar in composition, though they may differ in flavor and appearance. White corn is, as a rule, milder in flavor than yellow. The preference for one sort or another is largely personal or local. White corn is preferred generally in the Southeastern States and in some parts of New England, and yellow through the Northern States as a whole, while the blue, black, and red varieties have always been used in parts of the Southwest where Mexican influence is marked.

Whatever variety is chosen, only clean, sound, properly stored corn should be used for human food. It is impossible to get a good product from grain that has been kept in damp, rat-ridden cribs. New corn is better than old for meal and hominy.

Corn and the other common cereals are wholesome foods, and one kind of grain is about as easily and thoroughly digested as another by normal persons. The fineness of grinding and the removal of the coarse parts of the skin or bran make some difference in the digestibility, as has just been shown, but not enough to be very important to a healthy person. Cooking the cereals undoubtedly makes them more easily and quickly digested by softening them and giving the digestive juices a better chance to act on the nutrients, and it also makes them more palatable to most persons. It was formerly supposed that uncooked starch was not digested, but recent experiments have proved that it is digested by normal adults, the completeness of digestion depending apparently on the size of the starch granules. Corn and rice starch, for example, were found to be as completely digested raw as cooked, but the raw potato starch, which was much more coarsely grained, was less thoroughly digested than the cooked.

The disease known as pellagra was formerly supposed to be caused by a sort of poisoning due to corn or to a fungus growing in spoiled corn, but this has been completely disproved. The reason why the theory was ever set up is that the disease was first studied in southern Europe among people who lived almost exclusively on corn. Pellagra is now believed to be largely, if not entirely, caused by restricted diets which do not supply all the necessary food ingredients, particularly by those which furnish little or no flesh foods, eggs, dairy products, fresh vegetables, or fruits. The best way to guard against it is to try to use these foods freely. If they are hard to secure in abundance it is wise to choose "old-process" corn meal (see p. 7), whole-wheat flour, and unpolished rice rather than the preparations from which the skin and germ of the grain have been more completely removed.

Corn, like rice, is often served as a vegetable with meat in the place of such starchy vegetables as potatoes, sweet potatoes, and beans. These cereals are rather similar to these vegetables as a source of protein and energy, but are not as good a source of mineral matters and vitamins as are most vegetables and fruits. Consequently, when corn takes the place of a vegetable one should make sure that the diet includes a sufficient amount of other vegetables or fruit. The chem-

ical composition of the corn kernel and of a variety of corn products is given in the following table, which also includes some other cereals and vegetable foods for comparison. In studying the figures in this table it should be remembered that they do not show either the vitamins furnished by the different materials nor how completely the protein from the various foods meets the needs of the body.

Composition and energy value of corn, corn products, and other food materials.

Food materials.	Refuse.	Water.	Protein.	Fat.	Carbohy- drate.	Mineral matter.	Energy value per pound.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Calo- ries.
Corn, whole grain.....		10.8	10.0	4.3	73.4	1.5	1,690
Corn, breakfast food, flake and parched.....		7.3	10.1	1.8	78.4	2.4	1,680
Corn meal:							
Old process, unbolted.....		12.0	8.7	4.7	73.3	1.3	1,680
Old process, bolted.....		12.0	8.9	4.9	73.2	1.0	1,690
New process or granular.....		12.5	9.2	1.9	75.4	1.0	1,615
New process or granular, boiled.....		85.5	1.5	.3	12.6	.1	270
Hominy:							
Coarse.....		10.8	8.3	.5	80.1	.3	1,625
Fine.....		11.0	9.4	.7	78.6	.3	1,625
Lye or hulled corn.....		74.1	2.3	.9	22.2	.5	480
Boiled.....		79.3	2.2	.2	17.8	.5	370
Corn flour.....		12.6	7.1	1.3	78.4	.6	1,605
Cornstarch.....					90.0		1,635
Corn sirup (glucose).....		16.0			83.5	.5	1,515
Corn oil.....				100.0			4,085
Pop corn.....		10.7	11.2	5.2	71.4	1.5	1,710
Popped corn.....		4.3	10.7	5.0	78.7	1.3	1,825
Sweet corn:							
On cob.....	61.0	29.4	1.2	.4	7.7	.3	180
Edible portion.....		75.4	3.1	1.1	19.7	.7	460
Canned.....		76.1	2.8	1.2	19.0	.9	445
Oats, whole grain.....		11.0	11.8	5.0	69.2	3.0	1,675
Rice, whole grain.....		12.0	8.0	2.0	77.0	1.0	1,625
Wheat, whole grain.....		10.6	12.2	1.7	73.7	1.8	1,630
Wheat flour, white.....		12.0	11.4	1.0	75.1	.5	1,610
Wheat bread, white.....		35.3	9.2	1.3	53.1	1.1	1,185
Potatoes:							
White, as purchased.....	20.0	62.6	1.8	.1	14.7	.8	305
White, edible portion.....		78.3	2.2	.1	18.4	1.0	380
White, boiled.....		75.5	2.5	.1	20.9	1.0	430
Sweet, as purchased.....	20.0	55.2	1.4	.6	21.9	.9	445
Sweet, edible portion.....		69.0	1.8	.7	27.4	1.1	560

CORN MEAL.

Corn meal is the form in which corn is perhaps most commonly used for human food. In primitive times it was ground with stones by pounding and crushing the dry, ripe grain in a hollow log (fig. 2) or on a flat or hollowed stone. Gradually mills were developed, at first turned by hand and later by water power. Gradually also methods of winnowing and sifting or bolting were improved so that more or less of the skin and germ could be removed.

Nowadays there are two general ways of grinding corn meal, one sometimes called "old process" and the other "new process."

"Old-process" meal is also known as "water ground," because the mills in which it used to be made were run by water power. Small water-turned mills are still to be found here and there through the Southeastern States, but this type of meal is now also made in large modern mills equipped with electricity and elaborate devices for cleaning and bolting. A better name would be "stone ground," for in all "old-process" mills the corn is crushed between stones.

White corn is most commonly used. The skin and germ are not removed before grinding, and although more or less of them are bolted



FIG. 2.—A primitive implement used by the American Indians and early colonists in preparing hominy and corn meal.

out, some of the skin and a large proportion of the germ remain in the finished meal, even in the most finely ground. The method of grinding makes stone-ground meal feel soft to the touch. The pres-

ence of the germ gives it what many consider a richer flavor. This type of meal can not be kept indefinitely, and is chiefly supplied by local mills rather than from large distributing centers. In parts of the South people still take their home-grown corn to the near-by mill and bring away freshly ground meal or hominy.

"New-process" meal is ground between steel rollers or steel disks in mills provided with intricate modern equipment. Both white and yellow corn are used, the yellow being more common in the North.

During milling the bran and germ are broken and largely, but not entirely, removed. The remainder of the grain is then used to make hominy, grits, meal, or flour. Very little of the skin is found in these products, the greater part going into others used for feed and by brewers. "New-process" corn meal feels dry and granular when rubbed between the fingers. It keeps well and can be obtained all over the country except where the old-fashioned meal is still preferred.

These differences in the types of corn meal make it hard to give recipes that will produce equally good results in all parts of the country. Many believe that the granular, "new-process" meal usually found in the North requires more and longer cooking than the "old-process" meal, popular in the South. For breads which are made with baking powder or eggs or in which corn meal is mixed with white flour the two kinds of corn meal may be treated in much the same way, but for waffles, doughnuts, and some kinds of bread the granular meal should be softened by scalding before it is mixed into a batter.

Each locality where corn is used in large amounts seems to have worked out its own peculiar dishes.

The southern cook made hoecake or corn pone by mixing corn meal and water and sometimes a little fat into a dough and cooked it on a board before an open fire or baked it in the oven. The early New Englander made similar cakes, which, when baked before the fire, were sometimes basted with cream to make them richer. The New Englander also had his "hasty pudding," made by cooking corn meal in a large quantity of water—a very common article of diet. This was made thick enough so it could be eaten as a mush with milk when hot and fried in slices when cold. The American Indians made many kinds of corn bread and often mixed meats, peppers, or other food materials with the dough.

Besides these simple dishes, various peoples have worked out combinations of corn meal with foods differing from it widely in composition. In many cases the materials added furnish the necessary food ingredients that are lacking in the corn. For example, almost every locality which uses corn meal in large amounts has a characteristic dish in which it is used with milk, cheese, meat, or other foods that supply more adequate protein than does the corn. Probably the best-known dishes of this kind in the United States are the mush and milk of the earlier settlers of New England and the hoecake and buttermilk of the South. "Stamp and go," a favorite dish among the natives of Jamaica, is made up of salt fish, lard, and corn meal (for a similar dish, see the recipe for corn-meal fish balls on p. 16), and has a nutritive value like that of scrapple (see p. 15). The use of cheese, which consists chiefly of an excellent

form of fat and protein, with polenta (see below), may be considered an instinctive attempt by the Italians to satisfy the physiological food requirement by means of a single dish.

Most of the dishes mentioned above had their origin where life was simple and where few dishes were served at a meal. In most American homes of the present, meals consist not of one but of several dishes, and there is a considerable variety of food materials used in the course of a day or a week. When the protein foods and the fruits and vegetables are represented sufficiently in other dishes there is, of course, no necessity for providing these in the same dish with the corn meal.

Suggestions and recipes for using corn meal in various ways are given beyond. It should also be remembered that corn meal may be substituted for all or part of the wheat flour in many recipes for quick breads, muffins, griddlecakes, and cookies, using a scant cup of meal in place of a level cup of flour, baking more slowly and longer, and dropping rather than rolling out biscuit.

CORN-MEAL MUSH.

Corn-meal mush is made by cooking the meal in salted water. To produce a satisfactory flavor it should reach the boiling point at some time during the cooking. An old method is to allow the water to come to the boiling point and to add the meal slowly, stirring constantly. The objections to this are that there is considerable danger that the mush will become lumpy and that it is often unpleasant for the cook to stand over a hot stove and stir the mixture sufficiently to make it smooth. A better method, therefore, is the following:

Put the corn meal, cold water, and salt together in the top of a double boiler. No stirring is necessary. Put the top of the double boiler into the lower part and allow the mush to heat slowly, cooking half an hour, or longer, if convenient. Many people cook it as long as four hours. For each cup of meal allow from 1 to 1½ level teaspoons of salt and from 3½ to 4½ cups of water, depending on the length of cooking. Milk may be added in place of part or all of the water. Just before serving remove the top of the double boiler from the lower part and boil the mush for two or three minutes. In boiling it at this time there is no danger that it will lump.

This general method, though seldom the same proportion of water to meal, may be followed whenever cooked corn meal is to be used in the dough or batter for bread, doughnuts, or other dishes. In these cases, however, the final boiling is not necessary, for the meal is sufficiently heated later.

POLENTA.

This dish, which is common in Italy, differs little, except in name, from corn-meal mush, though it is served in very different ways. Sometimes cheese is added during the cooking. Polenta is often reheated either with tomato sauce or a meat gravy left over from a meal, or with a meat gravy made from a small amount of meat bought for the purpose, or with half tomato sauce and half meat gravy. In any case, the dish is improved by sprinkling the cooked polenta with cheese. When the polenta is to be reheated in gravy, it is well to cut it into small pieces in order that the gravy may be well distributed through the dish.

SAUCES FOR POLENTA.

TOMATO SAUCE.

2 tablespoons butter.
2 tablespoons flour.

1 cup thick strained tomato juice.
Salt and pepper.

Melt the butter; cook the flour thoroughly in it; add the tomato juice and seasonings; and cook until smooth, stirring constantly.

SAVORY SAUCE.

Take 2 ounces of salt pork, bacon, or sausage. If bacon or pork is used, cut it into small pieces. Heat until crisp but not burned. In the fat which separates out from the meat, cook a small amount of finely chopped onion and red or green pepper, being careful not to burn them. Add 1 cup of thick tomato juice or a larger amount of uncooked juice, and cook the mixture until it is reduced to a cupful. Season with salt. To this sauce capers, mushrooms, or finely chopped pickle may be added.

FRIED CORN-MEAL MUSH.

The custom of packing hasty pudding in granite pans, cutting it into slices, and frying it is too common to call for special mention here. A less common method in this country is that employed in Italy, where polenta is usually spread out in thin layers on a board and cut into small blocks. These blocks are egged and crumbed, and fried in deep fat. Another method is to mix corn meal in three times its volume of water and to cook it in water only long enough to form a mush, and to complete the cooking by frying the mush in butter or other fat. This is not so stiff as ordinary fried corn-meal mush, and has the advantage of requiring a shorter time for its preparation, as the temperature of fat suitable for frying is far greater than that of boiling water.

BAKED CORN-MEAL MUSH.

When corn-meal mush is partly done, pour it into shallow pans, making a layer not more than 2 inches thick, and cook in an oven until it is well browned.

BUTTERMILK CORN-MEAL MUSH.

White corn meal cooked in buttermilk makes a dish which resembles cottage cheese in flavor. It may be eaten hot, but is especially palatable when served very cold with cream. For this purpose it is sometimes molded in cups. In making it, allow 1 part of corn meal to 6 parts of buttermilk and 1 teaspoon of salt to each cup of meal.

CORN-MEAL MUSH WITH CHEESE.

For this dish yellow corn meal is generally used, and the cheese may be added just before the mush is taken from the fire. For a mush made with 1 cup of yellow corn meal the usual allowance is one-half cup, or 2 ounces, of grated cheese. There is, however, no limit to the quantity of cheese which can be added, and the addition of the cheese tends to make not only a more highly nitrogenous and nourishing dish but also one which can be eaten without the addition of butter or cream. Like the ordinary corn-meal mush, it is often fried either in deep fat, after having been egged and crumbed, or in a small amount of fat, or baked.

CORN-MEAL BREADS.

CORN PONE.

2 cups corn meal.

$\frac{1}{2}$ cup water

$\frac{1}{2}$ cup sour milk or buttermilk.

$\frac{1}{2}$ teaspoon soda.

$\frac{1}{2}$ cup wheat flour.

1 teaspoon salt.

1 tablespoon sugar.

2 teaspoons baking powder.

Either pour the water and milk over the corn meal in a double boiler and cook a few moments or boil the water and pour it over the corn meal; then add the buttermilk. Sift together the flour, salt, sugar, baking powder, and soda and add to the corn meal when it is cool. The mixture should be just stiff enough to make into cakes or "pones." If it is stiffer than this, add a little water. Form into cakes and place in a hot, well-greased pan and bake in a hot oven until brown. The cakes should be handled lightly and not pressed down after they have been placed in the pan.

CRACKLING BREAD.

For each cup of corn meal allow three-fourths teaspoon salt and half a cup of cracklings, the crisp brown particles that are left after lard is rendered. If the cracklings contain a great deal of fat, place them while warm in a piece of cheesecloth and squeeze out part of the fat. Pour boiling water over the meal till it is of such consistency that it can be mashed with the hand. Add the cracklings, shape into cakes, and bake.

CRISP CORN-MEAL CAKE.

3 cups milk.		1½ cups corn meal.
1 teaspoon salt.		

Mix the ingredients and spread on shallow buttered pans to a depth of about one-fourth of an inch. Bake in a moderate oven until crisp.

This will serve 6 persons.

SOUTH CAROLINA YEAST CORN BREAD.

1½ quarts of fine corn meal.		1½ quarts wheat flour.
2½ quarts wheat flour.		2 teaspoons salt.
or		1 pint mashed sweet potatoes.
2½ quarts fine corn meal.		1 cake yeast, dry or compressed.

Mix 1 pint each of the corn meal and the flour and add warm water enough to form a stiff batter. Add the yeast cake, mixed with a small amount of water. Keep this sponge in a warm place until it becomes light. Scald the remaining meal with water, and as soon as it is cool enough add it to the sponge, with the flour, potatoes, and salt. The dough should be just thick enough to knead without danger of it sticking to the board. Experience will teach how much water



FIG. 3.—Risen bread in which wheat flour was partly replaced by corn meal.

to use to secure this end. Knead well and put in a warm place to rise. When it is light, form into loaves, put into bread pans, and let it rise until its volume is doubled. Bake in a moderate oven.

RAISED CORN-MEAL MUFFINS.

1 cup scalded milk.		½ yeast cake.
3 tablespoons butter or other fat.		½ cup lukewarm water.
4 tablespoons sugar.		1 cup corn meal.
1 teaspoon salt.		1½ cups wheat flour.

Add the shortening, sugar, and salt to the milk. When lukewarm add the yeast softened in the water, the corn meal, and the flour. Beat well; let rise over night. Beat well and half fill greased muffin rings. Let rise until nearly double and bake in a hot oven for half an hour.

This makes 12 muffins.

BOSTON BROWN BREAD.

1 cup corn meal.		1 teaspoon salt.
1 cup rye meal.		¾ cup molasses.
1 cup graham flour.		2 cups sour milk, or
2½ teaspoons soda.		1½ cups sweet milk.
4 teaspoons baking powder.		

Mix and sift the dry ingredients and add the molasses and milk. Beat thoroughly and steam $3\frac{1}{2}$ hours in well-buttered covered molds. Remove the covers and bake the bread long enough to dry the top.

This may be made also with $1\frac{1}{2}$ cups each of corn meal and rye meal and no graham flour. A cup of seeded and shredded raisins or prunes or a cup of Zante currants may be added.

This serves 8 persons.

SOUR-MILK CORN BREAD.

- | | | |
|--------------------------------------|--|--------------------------------|
| 2 cups corn meal. | | $1\frac{1}{2}$ teaspoons salt. |
| 2 cups sour milk. | | 2 eggs. |
| 2 tablespoons butter. | | 1 teaspoon soda. |
| 2 tablespoons sugar, white or brown. | | 1 tablespoon cold water. |

There are two ways of mixing this bread, and also those in the four following recipes, all of which include milk and eggs. By the first method the meal, milk, salt, butter, and sugar are cooked in a double boiler for about 10 minutes. When the mixture is cool the eggs, well beaten, are added, and the soda, dissolved in the water. By the other method all the dry ingredients, including the soda, are mixed together, and then the sour milk and eggs well beaten and the butter are added. If the second method is followed the cold water is not needed. The bread should be baked in a shallow iron or granite pan for about 30 minutes.

Since the bread made by the first method is of much better texture, that method is to be preferred except in cases where there is not time for the necessary heating and cooling of the meal.

Buttermilk may be substituted for the sour milk, in which case the butter should be increased slightly; or sour cream may be used and the butter omitted.

This serves 6 persons.

SPIDER CORN BREAD.

- | | | |
|------------------------------------|--|---------------------------|
| $1\frac{1}{2}$ cups corn meal. | | 3 teaspoons baking powder |
| 2 cups sour milk and | | 1 teaspoon salt. |
| 1 teaspoon soda; | | 2 eggs. |
| or, | | 2 tablespoons butter. |
| $1\frac{3}{4}$ cups sweet milk and | | |

Mix as in the preceding recipe save that the fat should be used to grease an iron spider. Heat the spider, pour in the batter, and bake on the middle shelf of a hot oven.

SOUTHERN CORN MUFFINS.

These are made like the spider corn bread in the preceding recipe save that 2 cups of corn meal are used and the dough placed in hot, greased iron muffin pans and baked about 20 minutes in a fairly hot oven.

CUSTARD CORN CAKE.

- | | | |
|--------------------------|--|--------------------------------|
| 2 eggs. | | 1 cup sweet milk. |
| $\frac{1}{4}$ cup sugar. | | $1\frac{3}{4}$ cups corn meal. |
| 1 teaspoon soda. | | $\frac{1}{2}$ cup wheat flour. |
| 1 teaspoon salt. | | 2 tablespoons butter. |
| 1 cup sour milk. | | 1 cup cream. |

Mix all the ingredients but the cream and butter as directed for sour-milk corn bread (see above). Melt the butter in a deep pan, using plenty on the sides. Pour in the batter, add (without stirring) a cup of cream, and bake 20 to 30 minutes. When cooked there should be a layer of custard on top of the cake or small bits of custard distributed through it.

For economy's sake milk may be used in place of the cream in this recipe.

This serves 6 persons.

SPOON CORN BREAD.

- | | | |
|------------------------|--|----------------------|
| 2 cups water. | | 1 tablespoon butter. |
| 1 cup milk. | | 1 teaspoon salt. |
| 1 cup white corn meal. | | 2 eggs. |

Mix as directed for sour-milk corn bread (see above). Add the eggs well beaten and the other ingredients. Beat thoroughly and bake in a well-greased pan for 25 minutes in a hot oven. Serve from the same dish with a spoon.

This serves 6 persons.

SWEET-MILK CORN BREAD.

2 cups yellow corn meal.
1 cup wheat flour.
2 cups milk.
 $\frac{1}{2}$ cup sugar.

1 teaspoon salt.
2 eggs.
3 teaspoons baking powder.

Sift together the corn meal, flour, sugar, salt, and baking powder. Add the eggs well beaten and the milk and bake one-half hour in a moderate oven.

In this case, as in the recipe for sour-milk corn bread, the corn meal can be cooked for a short time with the milk if a softer bread is desired.

This serves 8 persons.

CORN-MEAL PUFFS, GRIDDLECAKES, AND WAFFLES.

The peculiar granular consistency of corn meal, which is a disadvantage under some circumstances, is an advantage in making such dishes as griddlecakes and waffles, for it renders them very tender.

CORN-MEAL PUFFS.

1 pint milk.
 $\frac{1}{2}$ cup corn meal.
4 tablespoons sugar.

$\frac{1}{2}$ teaspoon salt.
4 eggs.
Grated nutmeg (if desired).

Cook the milk and meal together 15 minutes with the salt and sugar. When cool add the eggs well beaten. Bake in cups. Serve with stewed fruit or jam.

This serves 6 persons.

CORN-MEAL FRITTERS.

By increasing the corn meal in the preceding recipe to one-half cup the batter is made stiff enough to be dropped into hot fat and fried.

This serves 6 persons.

CORN-MEAL PANCAKES.

2 cups wheat flour.
 $\frac{1}{2}$ cup corn meal.
 $1\frac{1}{2}$ tablespoons baking powder.
 $1\frac{1}{2}$ teaspoons salt.
 $\frac{1}{2}$ cup sugar.

$1\frac{1}{2}$ cups boiling water.
 $1\frac{1}{4}$ cups milk.
1 tablespoon melted butter.
1 egg.

Add the meal to the boiling water and boil 5 minutes; turn into a bowl, add the milk and remaining dry ingredients mixed and sifted, then the egg well beaten, and butter. Cook on a greased griddle.

This serves 6 persons.

CORN MEAL AND WHEAT WAFFLES.

$1\frac{1}{2}$ cups water.
 $\frac{1}{2}$ cup white corn meal.
 $1\frac{1}{2}$ cups milk.
3 cups wheat flour.
3 tablespoons sugar.

$1\frac{1}{2}$ tablespoons baking powder.
 $1\frac{1}{2}$ teaspoons salt.
Yolks 2 eggs.
Whites 2 eggs.
2 tablespoons melted butter.

Cook the meal in boiling water 20 minutes; add the milk, dry ingredients mixed and sifted, yolks of eggs well beaten, butter, and whites of eggs beaten stiff. Cook on a greased waffle iron. These waffles are often considered by most persons better than those made with wheat flour only.

This serves 6 persons.

CORN MEAL AND RICE WAFFLES.

$\frac{1}{2}$ cup corn meal.
 $\frac{1}{2}$ cup wheat flour.
1 cup boiled rice.
2 eggs well beaten.

1 tablespoon melted butter.
 $\frac{1}{2}$ teaspoon soda.
1 teaspoon salt.
1 cup sour milk.

Sift together the flour, soda, and salt. Add the other ingredients and beat thoroughly.

This serves 6 persons.

BUTTERMILK WAFFLES.

3 cups water.
2 cups corn meal.
2 cups wheat flour.
1 cup sweet milk.
4 eggs.

2 tablespoons butter.
2 teaspoons salt.
1½ teaspoons soda.
Buttermilk or sour milk enough to
make a thin batter.

Cook the meal, water, salt, and butter together in a double boiler for 10 minutes. When the mush is cool add the eggs, beaten separately until very light. Sift the flour and soda together. Add the flour and the sweet milk alternately to the corn mixture. Finally add the buttermilk. This mixture is improved by standing a short time.

This serves 10 persons.

CORN MEAL AND MEAT DISHES.

A number of dishes are made of meat or fish in which corn meal mush is used, or which resemble mush in some particulars. Recipes for such dishes follow:

CORN-MEAL MUSH WITH PORK.

1 pound lean pork, part meat and part
bone.
1 cup corn meal.

1 teaspoon salt.
½ teaspoon powdered sage.
Water.

Cook the pork in water until the meat can be removed easily from the bone. Remove the meat, cool the broth, and remove the fat. Reduce the broth to about a quart, or add water enough to bring it up to this amount, and cook the corn meal in it. Add the meat finely chopped and the seasonings. Pack in granite bread tins. Cut into slices and fry. Beef may be used in the same way. This serves 6 persons.

SCRAPPLE.

Scrapple is similar to the preceding dish except that it is usually made from the head and sometimes the liver and heart of the hog. The Bureau of Animal Industry gives the following directions:

10 pounds whole hog heads.
2½ pounds hog livers and hearts.
A small quantity of beef, if desired.
6 pounds corn meal, yellow or mixed.
½ pound salt.

½ pound buckwheat or rye flour.
3 ounces spices, including pepper, sage,
marjoram, and thyme in any desired
proportions.

Clean the heads thoroughly, removing the eyes and ear tubes. Split the head lengthwise and remove the teeth and the soft bones in and near the nasal cavities. Place the heads and other meat in a large kettle with a liberal quantity of water and cook until the meat falls off the bones. Separate the meat and soft tissue from the bones and pass through a meat grinder. Strain the liquid in which the meat was cooked to remove the small pieces of bone, return to the kettle and heat to the boiling point. Then slowly add the meal and flour, stirring constantly. Boil and stir until the mass becomes thick. Add the salt, spices, and chopped meat, and boil 10 minutes longer. Pour while still hot into deep wet molds; bread pans will do. Pour 2 to 4 tablespoons of melted lard over the material in the pans.

The scrapple is ready for use as soon as it has cooled. To prepare it for the table it is usually cut into slices about one-half inch thick, dusted with flour, cracker dust, or dry corn meal, fried until the outside is crisp, and served hot. Fried apples are good with fried scrapple.

ROAST PORK WITH BATTER PUDDING.

A dish corresponding to the Yorkshire pudding which is frequently served with roast beef can be made out of corn meal to serve with roast pork.

½ cup corn meal.
1 cup milk.

½ teaspoon salt.
2 eggs.

Place the milk, corn meal, and salt in the top of a double boiler and cook about 10 minutes, or until the meal has expanded to form a mixture. After

the mixture has cooled, add the eggs, well beaten. Grease gem tins thoroughly, allowing to each about 1 teaspoon of fat from the roast pork. Bake in a moderate oven, basting occasionally with the drippings of the pork.

This serves 4 persons.

CORN-MEAL FISH BALLS.

2 cups cold white corn-meal mush.	1 egg.
1 cup shredded codfish.	1 tablespoon butter.

Pick over the codfish and soak it to remove salt, if necessary. Combine the ingredients and drop by spoonfuls into hot fat. Drain on porous paper. These codfish balls compare very favorably in taste with those made with potato and are prepared more easily and quickly. The mush must be as dry as possible.

This makes 12 fish balls.

CORN-MEAL PUDDINGS AND CAKES.

INDIAN PUDDING.

5 cups milk.	1 teaspoon salt.
$\frac{1}{3}$ cup corn meal.	1 teaspoon ginger.
$\frac{1}{2}$ cup molasses.	

Cook milk and meal in a double boiler 20 minutes; add molasses, salt, and ginger; pour into buttered pudding dish and bake 2 hours in slow oven; serve with cream.

This serves 8 persons.

CORN-MEAL AND FIG PUDDING.

1 cup corn meal.	1 cup finely chopped figs.
1 cup molasses.	2 eggs.
6 cups milk (or 4 cups of milk and 2 cups of cream).	1 teaspoon salt.

Cook the corn meal with 4 cups of milk, add the molasses, figs, and salt. When the mixture is cool, add the eggs well beaten. Pour into a buttered pudding dish and bake in a moderate oven for 3 hours or more. When partly cooked add the remainder of the milk or the cream without stirring the pudding.

This serves 8 or 10 persons.

CORN-MEAL AND APPLE PUDDING.

For the figs in the preceding recipe substitute a pint of finely sliced or chopped sweet apples.

This serves 8 or 10 persons.

INDIAN-MEAL DOUGHNUTS.

$\frac{3}{4}$ cup milk.	2 eggs well beaten.
1 $\frac{1}{4}$ cups very fine white corn meal.	1 teaspoon cinnamon.
1 $\frac{1}{2}$ cups wheat flour.	2 teaspoons baking powder.
$\frac{1}{2}$ cup butter.	1 level teaspoon salt.
$\frac{1}{2}$ cup sugar.	

Put the milk and meal into a double boiler and heat together for about 10 minutes. Add the butter and sugar to the meal. Sift together the wheat flour, baking powder, cinnamon, and salt. Add these and the eggs to the meal. Roll out on a well-floured board, cut into the desired shapes, fry in deep fat, drain, and roll in powdered sugar.

This makes 30 medium-sized doughnuts.

MOLASSES CORN CAKE.

2 cups yellow corn meal.	1 cup sour milk.
$\frac{1}{2}$ cup molasses.	1 $\frac{1}{2}$ cups sweet milk.
$\frac{1}{2}$ cup sugar.	1 cup wheat flour.
2 tablespoons butter.	1 $\frac{1}{2}$ teaspoons soda.
1 teaspoon salt.	1 egg.

Mix the first seven ingredients in a double boiler and cook over hot water. Cook for about 25 minutes after the mixture has become hot. After it has cooled add the wheat flour and soda, thoroughly sifted together, and the egg well beaten. Bake in a shallow tin.

This serves 6 persons.

CORN-MEAL GINGERBREAD.

To the preceding recipe add 1½ teaspoons ginger, 1½ teaspoons cinnamon, and ½ teaspoon cloves, sifting them with the flour.

This serves 6 persons.

FRUIT GEMS.

½ cup corn meal.
1 cup wheat flour.
3 teaspoons baking powder.
6 tablespoons sugar.
2 tablespoons melted butter.
1 teaspoon salt.

1 cup milk.
1 cup raisins or currants.
2 eggs.
1 tablespoon flour reserved for flouring
currants or raisins.

Mix and sift the dry ingredients; add the milk gradually, the eggs well beaten, melted butter, and raisins, which have been floured. Bake in a hot oven in buttered gem pans 25 minutes.

This makes 12 cakes.

CORN FLOUR.

Corn flour is corn meal ground and bolted until it is as fine as wheat flour. It is used in considerable quantities by bakers and as a "binder" in sausage making. During the war it was widely sold as a wheat-flour substitute for use in quick breads, cakes, and general cooking, but it is not ordinarily found on the retail market.

Some of the pancake flours on the market contain corn flour or fine corn meal, usually mixed with flour made of wheat, rye, barley, or other cereals. They may also contain baking powder and sometimes a little salt and sugar, and can be made ready for the griddle merely by mixing with liquid as directed on the wrapper.

In England the term "corn flour" refers to the separated starch which in this country is called cornstarch (see p. 3) and which is used for thickening sauces and puddings.

HOMINY.

There are several kinds of hominy on the market, but for the most part they differ more in the fineness to which they are ground than in their food value. The names by which the different kinds are known often vary with the locality, so that it is sometimes hard to tell which is referred to.

To prepare hominy by modern methods the grain is soaked enough to soften it somewhat. It is passed through a machine called a degerminator, which breaks the grain into coarse pieces and also loosens the bran and germ, which are sifted out. The coarsely broken endosperm then is dried and sold as hominy. When left in fairly large pieces it is often known as samp or pearl hominy; when ground to a very coarse meal it is called hominy grits. Any kind of hominy may be used like rice, in place of a vegetable or for a breakfast cereal. The hominy grits may also be used in puddings and cakes.

Lye hominy, or hulled corn, is a special preparation made by soaking the whole grain in water that contains lye, or sometimes merely

a bag of wood ashes, until the hulls are loosened or softened, then washing the hulled grains in clear water and boiling. Lye hominy may be made at home (see p. 19) or it may be bought either in bulk or canned. It has a distinctive flavor which many enjoy and is used in the same ways as other coarse hominy.

The recipes that follow suggest a few of the ways in which hominy may be prepared.

BOILED COARSE HOMINY OR SAMP.

This kind of hominy requires long cooking. It may be prepared in a fireless cooker or in a double boiler on the back of the stove. It is wise to cook a large quantity at once, as it does not spoil easily if kept in a cool place.

Soak 1 cup coarse hominy in 2 cups water for 6 hours or overnight. If a fireless cooker with a radiator is used, add 6 cups boiling water and 3 teaspoons salt to the soaked hominy and boil over the fire for 10 minutes, put in the cooker and let it remain there for 8 to 12 hours. If there is no radiator in the cooker, the hominy should be cooked over the fire for 45 minutes, and it may be necessary to reheat the hominy and put it back in the cooker the second time.

If the hominy is cooked in a double boiler more water may be needed, or a cup of milk may be stirred in about 15 minutes before removing from the fire. It takes 5 or 6 hours to cook the coarse hominy in a double boiler and about 2 hours directly over the fire.

When used in place of a vegetable the coarse hominy may be served plain or browned in a little fat.

HOMINY TURNOVER.

1 pint cooked coarse hominy.		2 well-beaten eggs.
1 cup milk.		1 tablespoon fat.
1 teaspoon salt.		

Mix all together. Turn into a frying pan in which the fat has been melted. Stir until hot throughout. Let it cook until golden brown on the bottom, then fold like an omelet and serve on a hot platter. This is suitable for the main dish at supper or luncheon.

SCALLOPED HOMINY.

Arrange in a baking dish alternate layers of boiled coarse hominy and minced meat or fish or grated cheese. Pour over all a cup of white sauce and bake for 30 minutes. This may be used as the principal part of the meat course.

HOMINY AND BEAN CAKES.

1 cup boiled coarse hominy.		½ cup milk.
1 cup cooked red kidney beans.		1 tablespoon fat.
¾ teaspoon cayenne pepper.		1 teaspoon salt.
½ tablespoon cornstarch.		

Make a white sauce from the last five ingredients by melting the fat, blending it with the cornstarch, salt, and pepper, adding the milk, and cooking until thickened. Grind the hominy and beans through a food chopper, mix with the white sauce, form into cakes, and brown in a little fat. Such cakes may take the place of meat occasionally.

BOILED HOMINY GRITS.

1 cup hominy grits.		2 teaspoons salt.
5 cups water.		

Add the grits slowly to the salted boiling water. Boil 10 minutes over fire, then place in the fireless cooker and allow to remain overnight, or cook for 2 hours in a double boiler.

The grits may be poured while warm into a dish or molds, cooled, and served with fruit or preserves for a simple dessert, or they may be cooked in deep pans, sliced, and fried.

HOMINY MUFFINS.

- | | |
|---------------------------------|------------------------------|
| 1 cup cold boiled hominy grits. | 2 teaspoons baking powder. |
| 1 cup sweet milk. | $\frac{1}{2}$ teaspoon salt. |
| 1 egg. | 1 tablespoon melted fat. |
| $1\frac{1}{4}$ cups corn flour. | |

Beat the milk and egg into the hominy grits, add the melted fat and dry ingredients. Mix well and bake in well-greased muffin pans for 30 minutes. This makes 12 muffins.

CORN MEAL AND HOMINY BREAD.

- | | |
|----------------------------|------------------------------|
| 1 cup corn meal. | 1 tablespoon melted fat. |
| 1 cup boiled hominy grits. | 1 teaspoon baking powder. |
| 1 cup milk. | $\frac{1}{2}$ teaspoon salt. |
| 1 egg. | |

Beat the milk and egg into the hominy grits, add the melted fat and dry ingredients, and mix well.

This batter may be baked in a greased pan and served with a spoon from the dish in which it is baked as a spoon bread, or it may be cooked on a griddle and served as griddle cakes.

HOMINY DATE PUDDING.

- | | |
|------------------------------|-----------------------------|
| 1 cup hominy grits. | $\frac{1}{2}$ cup sugar. |
| 5 cups milk (skim or whole). | 1 cup chopped seeded dates. |
| 1 teaspoon salt. | 1 teaspoon vanilla. |

Add the salt and hominy grits to the milk and cook in a double boiler one hour. Add sweetening, dates, and vanilla, and mix well. Partially cool before serving.

FRUIT SCALLOP.

- | | |
|--|----------------------------------|
| $1\frac{1}{2}$ cups cooked hominy grits. | 1 tablespoon sugar. |
| 1 cup stewed apricots. | $\frac{1}{2}$ tablespoon butter. |
| $\frac{1}{2}$ cup apricot juice. | |

Into a greased baking dish place first a layer of the hominy grits which have been mixed with the fruit juice, then a layer of the fruit. Repeat until dish is nearly full. Dot over with the butter and sprinkle with 1 tablespoon of sugar mixed with cinnamon. Bake until brown. Serve hot or cold with sauce or top milk.

Peaches, pears, and other fruits may be used instead of apricots.

LYE HOMINY OR HULLED CORN.

This is easily made at home from any variety of white or yellow dent or flint corn. The kinds with fairly large kernels are easier to hull than those with small kernels, and only clean, sound ears should be used.

The hulls and germs are loosened by steeping the corn in a lye solution, rubbing off the hulls, then washing out the lye, and finally boiling the corn. Sometimes the kernels are boiled with the lye, but cold soaking is also efficacious and gives what many consider a more delicate flavor. The Office of Cereal Investigations of the Bureau of Plant Industry recommends the following method:

Dissolve 5 ounces of lye (sodium hydroxide or caustic soda) in 6 quarts of cold water. Stir in 5 quarts of corn and let stand 15 hours. Wash thoroughly to remove the lye and the hulls; rubbing the hominy in a cloth bag helps to take off the hulls. When the washing is finished the hull and black tip should

be off and the kernel should look clean. The slight discoloration which the lye causes may be removed by soaking the hominy overnight in water to which a little salt has been added. Cover with water to which 5 tablespoons of salt have been added and boil in a covered kettle for three or four hours or until thoroughly cooked, making sure that the hominy remains covered with water. Changing the water once or twice during the cooking will lessen the taste of lye. Five quarts of corn will make from 15 to 20 quarts of lye hominy.

SPECIAL BREAKFAST PREPARATIONS.

Aside from the corn meal and hominy of various kinds that are commonly used as breakfast cereals, there are on the market other preparations of corn intended for the same purpose. These are mostly already cooked and require only warming up to make them ready to serve. Most are steam cooked and roasted. Some are pressed into flakes, and others are treated by a process resembling shredding. In some cases malt and other materials are added to improve the flavor.

These goods are usually sold in cartons under trade names, and the net weight of the contents is given on the wrapper, as required



FIG. 4.—An ancient Peruvian corn popper. A, top; B, bottom.

by law. They are clean and often very convenient, but their price is naturally higher than that of the plain meal or hominy. Whether the variety they offer and the ease with which they can be served are worth the extra cost each housekeeper must decide according to her individual circumstances.

POP CORN.

Though corn meal is now used in other parts of the world, pop corn seems still to be a peculiarly American product. White, fluffy kernels of popped corn have been found among prehistoric Indian remains in South America and also specially shaped earthenware implements (fig. 4) with a depression in the center and a long handle, evidently the equivalent of our modern corn poppers. In olden days in this country the grains were sometimes thrown on the hot coals, where they burst and bounded back on the floor for the children to scramble after. The varieties of corn best adapted for pop corn, methods of cultivation, poppers, and suggestions for making such pop-corn dainties as pop-corn balls are described in another bulletin of this series.²

Though pop corn is most often eaten between meals and as a sort of food accessory, it has a food value similar to that of the same

² U. S. Dept. Agr., Farmers' Bul. No. 553, Pop Corn for the Home.

weight of corn prepared in other ways. It makes an excellent breakfast cereal served with milk or cream, and is so used in many families. It is hard to imagine a better supper for a winter Sunday at home than corn popped over the open fire (fig. 5) and served



FIG. 5.—Popcorn for supper.

hot with melted butter or with milk and a little salt, and perhaps with apples or other fruit as a finish.

The recipes which follow show how popped corn can be made into wholesome homemade sweets of which children and elders are usually very fond.

CHOCOLATE POP CORN.

2 cups of white sugar.
 $\frac{1}{2}$ cup of corn sirup.

2 ounces of chocolate.
 1 cup of water.

Put these ingredients into a kettle and cook them until the sirup hardens when put in cold water. Pour over 4 quarts of crisp, freshly popped corn and stir well to insure the uniform coating of the kernels.

SUGARED POP CORN.

Make a sirup by boiling together 2 cups of granulated sugar and 1 cup of water. Boil until the sirup strings from the spoon or hardens when dropped into cold water. Pour over 6 quarts of freshly popped corn and stir well.

POP-CORN BALLS.

1 pint of sirup.
 1 pint of sugar.

2 tablespoonfuls of butter.
 1 teaspoonful of vinegar.

Cook till the sirup hardens when dropped into cold water. Remove to back of stove and add one-half teaspoonful of soda dissolved in a tablespoonful of hot water and then pour the hot sirup over 4 quarts of freshly popped corn, stirring till each kernel is well coated, when the mixture can be molded into balls or into any desired form.

Maple sirup makes light-colored balls, while darker ones are made with New Orleans molasses.

FRESH, CANNED, AND DRIED GREEN CORN.

The half-ripe ears of corn make a very favorite vegetable in this country. The so-called sweet varieties, which contain more sugar and less starch than those grown primarily for making meal or hominy, are especially prized for this purpose because of their better flavor and more delicate texture, but the other varieties are sometimes used in this way.

Green corn, like many other vegetables, is at its best when freshly gathered. Corn on the cob is not very convenient to serve or eat, and this method of cooking it would doubtless have been abandoned long ago if cutting the kernels from the cob before cooking did not materially modify the flavor. The most convenient way of cooking corn on the cob is ordinarily by boiling, but in old-fashioned fire-places roasting was a favorite method. This still survives as a common household practice in some localities and also in camp-fire cookery.

The season of fresh corn is more nearly limited to the season of maturity in a given region than that of almost any other common vegetable, for it can not be stored for any considerable time in good condition, even with modern appliances, and corn grown in warm climates and shipped long distances to our winter markets is very expensive and rather uncertain as to its quality. Corn, however, may be readily canned either at home or on a commercial scale, and when this is properly done the corn retains many of its desirable qualities. It is not surprising, therefore, to find that canned corn is one of the most popular canned vegetables.

A full discussion of the reasons for each step in the canning process and complete instructions are given in another bulletin of this series.³

Canned corn is used not only by itself but is also made into a variety of soups, fritters, puddings, and other dishes.

³ U. S. Dept. Agr., Farmers' Bul. No. 1211, Home Canning of Fruits and Vegetables.

The preservation of green corn by drying has long been practiced in the household and dried corn is to a limited extent prepared commercially. The ears of corn are first scalded for about 5 minutes, then cooled and the kernels cut from the cob. Unless the corn is very young and tender the resulting dried corn will be much more satisfactory if only the tips of the kernels are removed by the first cut and the remaining pulp scraped out with a dull knife, leaving the most of the hulls behind on the cob. Even in the case of young corn the cutting should not be so close as to include the base of the kernel.

The corn may be dried by any convenient method. Where a large quantity is being prepared it may be spread upon a table covered with muslin. Of course it must be protected from flies. The corn should be well stirred from time to time until thoroughly dry.

When wanted for use the dry corn should be rinsed quickly in cold water and put to soak for several hours in a small amount of water in which it is to be cooked. The cooking should be done slowly and water added as needed. Cooked dried corn may be used in any of the ways in which canned corn is served. Dried corn has a sweet, nutty flavor, and is especially liked for making cream of corn soup or in succotash.

Corn is sometimes combined with other vegetables. Succotash, a mixture of unripe corn and beans, is a dish borrowed, name and all, from the American Indians and has been a favorite since colonial times. To vary their winter diet, the colonists often cooked dry ripe corn and beans together, but such a dish does not possess the palatability of that made from green corn. Corn with tomatoes is another mixture which many persons like and which is quite commonly served. Directions for canning it at home are given in the bulletin referred to.⁴ Small, immature ears of unripe corn are sometimes used in mixed pickles, particularly in Europe, and relishes are also made in the United States from green corn, both as a domestic article and commercially.

The following recipes show a few of the many ways of using fresh and canned corn. Fresh corn can be used in place of canned corn in any of these. Canned corn may sometimes be substituted for fresh in the recipes which specify fresh corn, but the results are not likely to be so good because the consistency of the canned corn is usually not like that of the fresh.

BOILED CORN ON THE COB.

Free the corn from husks and "silk." Have a kettle of water boiling rapidly, drop the corn into the water and cook 10 minutes. If only a few ears of corn are put in a kettle of boiling water, the temperature of the water is not lowered greatly and the corn will cook in 8 minutes. On the other hand, if a large quantity of corn is crowded into a kettle of boiling water, the temperature is very much lowered and the time of cooking must be increased. When possible, surround the corn with a generous quantity of boiling water. Be careful not to cook sweet corn too long, or it is likely to be tough and tasteless.

When corn and potatoes are to be cooked at one time, six to eight ears can be steamed in the same kettle in which the potatoes are boiled. Lay the ears over the potatoes in rapidly boiling water and cover the kettle tightly.

⁴ U. S. Dept. Agr., Farmers' Bul. No. 1211, Home Canning of Fruits and Vegetables.

CORN CUT FROM THE COB.

Corn may be cut from the cob and heated with butter, pepper, and a little milk. Use either raw corn, or, better, corn that has been cooked on the cob for 5 minutes in boiling water to set the juice. With a sharp knife cut through the center of each row of grains and with the back of a case knife press the grains of corn from the hulls. Put the corn in a saucepan and season with salt, pepper, and butter. Add enough hot milk to moisten well, and cook 10 minutes. Serve at once.

Another method, sometimes known as "Maine style," is to cut the grains directly from the cob without scoring and scraping, and to season and heat as above. This is a good way to utilize left-over cooked ears.

SUCCOTASH.

To a pint of corn cooked as above, or to the same amount of canned corn, add a pint of cooked and seasoned shelled beans.

CORN SOUP.

1 can, or 2 cups corn.
1 pint boiling water.
1 pint milk.
1 slice onion.
2 tablespoons butter.

2 tablespoons flour.
1 teaspoon salt.
Dash of pepper.
Dash of paprika.

Fry the onion in the butter and stir in the flour. If raw corn is used, place it in boiling water and boil 5 to 7 minutes. Add the milk to the corn and bring to the scalding point. Thicken with the onion, flour, and butter mixture and add the seasonings.

CORN CHOWDER.

1 cup fresh corn.
1½ inch cube salt pork, diced.
1 onion, sliced.
1 quart potatoes, sliced.

1 cup milk or cream.
Salt and pepper.
8 crackers.

Fry the salt pork, add the onion, and cook until the onion is tender. Boil the potatoes 5 minutes in 1 quart of boiling water, add the fat, and cook until the potatoes are soft. Add the corn and milk and bring to the scalding point. Add the butter and seasoning. Pour over the crackers and serve hot.

SCALLOPED CORN.

1 cup milk.
1 can, or 2 cups corn.
1 cup bread or cracker crumbs.
2 slices green pepper.

1 teaspoon salt.
½ teaspoon pepper.
2 tablespoons butter.

Place alternate layers of corn and bread crumbs in a greased baking dish, adding butter and seasoning to each layer. If desired, 1 tablespoon of sugar may be added. Pour on the milk and bake for one-half hour.

CORN CUSTARD OR PUDDING.

1 can, or 2 cups corn.
2 tablespoons butter.
1½ teaspoons salt.

3 eggs.
1½ cups milk.
1 tablespoon sugar.

Mix as for a baked custard. Pour into a casserole and set in the oven in boiling water. Bake in a moderate oven (350° F.) until set, or about 1 hour and 15 minutes.

CORN FRITTERS.

4 tablespoons fresh corn.
1 teaspoon melted fat.
1 teaspoon baking powder.
1 egg.

½ cup milk.
1 cup flour.
½ teaspoon salt.

Mix to make a batter and fry in deep fat.

STUFFED GREEN PEPPERS.

- | | |
|--------------------------------------|-------------------------------------|
| 6 green peppers. | 1½ cups meat stock thickened with 2 |
| 2¼ cups fresh corn. | tablespoons flour. |
| ½ onion cut up fine. | 1½ cups bread crumbs. |
| 1½ cups meat chopped or ground fine. | ½ teaspoon salt. |
| | Dash of pepper. |

Remove the tops and seeds from the peppers and parboil in boiling water for 2 minutes. Remove from the water, drain, and put in a casserole. Stuff the peppers with a mixture of the corn, onion, meat, bread crumbs, thickened stock mixture, and seasoning and bake. The mixture may be varied by using other materials such as rice and tomatoes.

CORN SOUFFLÉ.

- | | |
|----------------------------------|------------------|
| 1 cup fresh corn. | 3 eggs. |
| 1 cup white sauce (see following | ½ teaspoon salt. |
| recipe). | Dash pepper. |

Add the well-beaten egg yolks to the sauce and fold in the corn. Fold in the stiffly beaten egg whites and place in a buttered baking dish, set the dish in a pan of hot water, and bake in a moderate oven (350° F.) 30 to 40 minutes.

WHITE SAUCE FOR SOUFFLÉ.

- | | |
|----------------------|-----------------------|
| 1 cup milk. | ½ tablespoon salt. |
| 3 tablespoons flour. | 2 tablespoons butter. |

Melt the butter and stir in the flour and salt. Add the scalded milk and stir until the mixture thickens and the flour is cooked. The white sauce may be made in a double boiler or directly over the flame. If the latter method is used, care must be taken that the product is not scorched.

SUMMARY.

Corn is one of the most important cereal foods in the United States, and is in more general use in the Southern than in the Northern States.

Its food value is very similar to that of the other cereals. When used in a diet that also supplies dairy products, flesh foods, and vegetables or fruits, the choice between the various cereals depends more on personal preference and price than on the nourishment supplied. If corn is abundant and cheap, or if wheat, rice, or other cereals are scarce or dear, corn may safely be substituted for them.

Corn preparations may be used in place of starchy vegetables such as potatoes, sweet potatoes, or beans, but in such cases some other vegetable or fruit should also be included in the diet to supply the mineral matters and vitamins which are less abundant or lacking in the corn.

Corn can be substituted for part of the wheat in making yeast-raised bread, but not for all because it does not contain the necessary gluten. It can also be used in place of part or all of the wheat flour in many good quick breads and cakes.

The amount of the germ and skin removed when corn is milled affects its food value as well as its appearance, flavor, and keeping quality. When the germ is removed most of the fat and all of vitamin A usually go with it. When the skin is removed the meal contains less cellulose and a little less protein, mineral substances, and vitamin B.

“Old-process” corn meal is ground by stones, and contains most of the germ and usually more or less of the skin. It therefore includes nearly all of the protein, fat, mineral matters, cellulose, and

vitamins, as well as the starch of the grain. Such meal feels soft and flourlike to the touch, has a flavor that many consider superior, but does not keep indefinitely. It is usually ground by local mills for quick consumption, and is more commonly used in the South.

"New-process" corn meal is ground by steel rollers or disks. Most of the germ and skin have been removed in preparing it, so that it usually contains somewhat less protein and considerably less fat, mineral matters, cellulose, and vitamins than "old-process" meal. It feels granular to the touch and keeps well.

Corn meal is boiled to make mush or porridge, which may be served as a breakfast cereal, in the place of a starchy vegetable, and in various other ways. The meal also forms the basis of many quick breads, cakes, and puddings, and is combined with milk, cheese, eggs, meat, or other foods into nutritious and wholesome dishes which may be served as the main dish at a meal.

Hominy, coarse hominy, samp, and hominy grits are names for preparations in which the corn kernel is split more or less finely.

Lye hominy or hulled corn is made by soaking the whole kernels in a lye solution to loosen the hulls, then washing the corn and boiling in water.

All kinds of hominy are used as a breakfast cereal, in place of starchy vegetables, and in a variety of cakes, puddings, and dishes made with meat, fish, or cheese.

Pop corn is made from special varieties of corn, the dried kernels of which burst open when quickly heated. A pound of popped corn has practically the same food value as a pound of dry corn meal or hominy.

Partly ripened or green corn, especially certain sweet varieties, is a favorite vegetable in this country. It is in common use both fresh and canned and is occasionally preserved by drying.



Ceremonial censer used by the Aztec Indians.

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE.

<i>Secretary of Agriculture</i>	HENRY C. WALLACE.
<i>Assistant Secretary</i>	C. W. PUGSLEY.
<i>Director of Scientific Work</i>	E. D. BALL.
<i>Director of Regulatory Work</i>	
<i>Weather Bureau</i>	CHARLES F. MARVIN, <i>Chief</i> .
<i>Bureau of Agricultural Economics</i>	HENRY C. TAYLOR, <i>Chief</i> .
<i>Bureau of Animal Industry</i>	JOHN R. MOHLER, <i>Chief</i> .
<i>Bureau of Plant Industry</i>	WILLIAM A. TAYLOR, <i>Chief</i> .
<i>Forest Service</i>	W. B. GREELEY, <i>Chief</i> .
<i>Bureau of Chemistry</i>	WALTER G. CAMPBELL, <i>Acting Chief</i> .
<i>Bureau of Soils</i>	MILTON WHITNEY, <i>Chief</i> .
<i>Bureau of Entomology</i>	L. O. HOWARD, <i>Chief</i> .
<i>Bureau of Biological Survey</i>	E. W. NELSON, <i>Chief</i> .
<i>Bureau of Public Roads</i>	THOMAS H. MACDONALD, <i>Chief</i> .
<i>Fixed Nitrogen Research Laboratory</i>	F. G. COTTRELL, <i>Director</i> .
<i>Division of Accounts and Disbursements</i>	A. ZAPPONE, <i>Chief</i> .
<i>Division of Publications</i>	JOHN L. COBBS, Jr., <i>Chief</i> .
<i>Library</i>	CLARIBEL R. BARNETT, <i>Librarian</i> .
<i>States Relations Service</i>	A. C. TRUE, <i>Director</i> .
<i>Federal Horticultural Board</i>	C. L. MARLATT, <i>Chairman</i> .
<i>Insecticide and Fungicide Board</i>	J. K. HAYWOOD, <i>Chairman</i> .
<i>Packers and Stockyards Administration</i>] CHESTER MORRILL, Assistant to the Secretary.
<i>Grain Future Trading Act Administration</i>	
<i>Office of the Solicitor</i>	R. W. WILLIAMS.

This bulletin is a contribution from

<i>States Relations Service</i>	A. C. TRUE, <i>Director</i> .
<i>Office of Home Economics</i>	C. F. LANGWORTHY, <i>Chief</i> .

27

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.

AT
10 CENTS PER COPY

PURCHASER AGREES NOT TO RESELL OR DISTRIBUTE THIS
COPY FOR PROFIT—PUB. RES. 57, APPROVED MAY 11, 1922